p.2 Document 117-5

> Paul F. Miller, P.E. 12 Gem Drive - Ellington, Ct 06029 Email; pfmeng@aol.com

Case 1:04-cv-00325-SJM

Global Management Consulting, LLC Business Phone 860-614-2897 Fax 860-870-9786 Home Phone 860-875-0617

Filed 03/26/2007

Page 1 of 13

## Comments Regarding R. Seibel September 12, 2006 Report

Mr. Seibel, in his report outlines his perspective of the boiler industry and boiler designs based on his experience. It should be noted that Mr. Seibel began his career more than 50 years ago, and much of his perspectives and opinion reflect outdated information and technology. Mr. Seibel also makes broad sweeping statements and conclusions that are either without foundation or factually incorrect.

2.1 - What is a Boiler? In this section, Mr. Seibel states "A boiler has no purpose other than to supply steam to a process or a turbine. The capabilities of a boiler are never needed alone." While Mr. Siebel's statements in this regard may seem to represent "conventional wisdom", they are factually incorrect in view of today's technology and technology demands.

In fact there are boilers in use today whose primary and/or sole purpose is the incineration and/or conversion of fuel products or wastes. While the generated heat may be converted to steam and utilized for beneficial purposes to improve process efficiency, in some cases the conversion of the heat to steam is for the primary and sole purpose of cooling and reducing the volume of the flue gases to facilitate emissions control treatment. In such cases, the generated steam may be diverted directly to atmosphere or more commonly diverted to a condensing system.

2.2 - Boiler System: In this section Mr. Seibel states that a boiler must be tied in with other ancillary systems including a fuel handing system, a burner and a combustion air system among others. Mr. Seibel has presented a misleading description in failing to describe that waste heat or heat recovery type boilers inherently do not have a dedicated fuel handing system, a burner or a combustion air system, but rather receive their heat input from an external and separately controlled system or process.

Further, Mr. Seibel states, "In most cases, to complement the process that requires steam, a boiler is expected to operate continuously for weeks and months without unpredicted shutdowns and maintenance downtime."

Again, while Mr. Siebel's statements may represent his view of "conventional wisdom" and seem innocuous, they are factually incorrect. Rather than operate continuously for extended periods, many boilers (particularly those tied to a process system) operate at widely variable loads depending on process requirements including multiple startup and shutdowns on daily, weekly or other periodic basis. Boilers used in plant standby service (currently a common application for gas/oil fired package boilers) may operate only on an intermittent basis and remain idle for extended periods.

2.3 - Buyer's Interests: Mr. Seibel opines that boiler design, boiler design capability and a proven design, among other things, would be critical and overriding factors in selecting a boiler supplier. In reality, by the 1990's package boilers were viewed by most clients

Case 1:04-cv-00325-SJM

Document 117-5 Filed 03/26/2007

Confidential Information

p.3

Page 2 of 13

Confidential Information Subject to Protective Order

as a "commodity" type product with price typically being the predominant factor for selection. Package boilers and package boiler designs had matured over a 40+ year period to a level by the mid-1990s, that subject to the offered boiler complying with specifications and inclusion of expected and specified features/scope of supply, there was little recognized or evaluated differentiation in design.

Also, in view of the successful and proven operating history of many thousands of package boilers supplied by a number of competing designers and manufactures, Clients were able to readily and confidently evaluate expectations regarding fulfillment of specified performance and guarantees based on information provided with proposals.

To the extent that Clients had any concerns with regard to package boiler design and/or performance, more typically those concerns would address the burner system and/or emissions rather than the actual boiler mechanical design or thermal performance.

Other important factors that Mr. Seibel fails to point out, would be the client's assessment of the financial and ownership stability of the supplier as well as the supplier's capabilities and assurances pertaining to timely delivery.

- 2.4 Worth of a Boiler Design: Conversely Mr. Seibel should acknowledge that restrictions and limitations placed on use of the design and/or design information would reduce or negate its value. Additionally the "Reference List", rather than the actual design may be of greater value to an acquirer or licensee.
- 2.5 Boiler Design: Mr. Seibel is not complete or accurate with regard to his description of various boiler designs. First, Mr. Seibel omits reference to other types of boilers, such as Electric Boilers, which are not Fire tube or Water Tube type or waste heat type units which do not incorporate a combustion chamber. Mr. Seibel further asserts that Water Tube type boilers would have a Drum for collection of steam, completely ignoring modern "Once Through" type Water Tube boilers that do not utilize or incorporate drums.

In some boiler designs, parts of the structure are "hot", while in other designs the structure is isolated from the "hot" pressure parts for both structural design and safety considerations.

The sizing of the combustion chamber, where utilized, addresses many factors as may be dictated by the burner supplier, not just residence time. A design approach which provides for a variable length furnace section (as incorporated in the Voyager design) provides flexibility to address these variables, including residence time. Further, significantly lower combustion temperatures and gas recirculation (which has an effect of lowering combustion chamber temperatures) are now utilized to address current emission requirements.

In addition to convective heat transfer in the boiler section, there is a non-luminous radiation "cavity" effect on boiler section heat transfer.

p.4

Case 1:04-cv-00325-SJM Document 117-5 Filed 03/26/2007 Page 3 of 13

> Confidential Information Subject to Protective Order

Further, boiler designers have adopted lower "pinch points" (the difference between the flue gas temperatures and the corresponding saturation temperature) and select the "pinch point" in conjunction with evaluation of economizer performance to optimize system efficiency and cost.

- 2.6 Heat Transfer Design: As Mr. Siebel points out; the design of Water Tube boilers has been an ongoing process for more than 100 years. Many thousands of Water Tube boilers and particularly "Package Boilers" have been provided to the marketplace by a number of competitive suppliers. There is an extensive and well developed body of knowledge known throughout the industry pertaining to boiler design and heat transfer. Further, as this body of knowledge has expanded, the understanding of multiple factors impacting heat transfer calculations and heat transfer calculation tools have become much more sophisticated. With the many thousands of operating boilers, non-proprietary "empirical" performance information has become widely and readily available, especially since the advent of the "information age", to assess the validity and accuracy of such heat transfer calculation methodologies and factors. Such factors, especially for relatively simplistic package boilers, which particular boiler suppliers may have historically attempted to keep as closely held or deem "confidential" have become generally widely known throughout the industry. In fact there are a number of commercially available boiler design tools and rating packages available which incorporate or reflect such information.
- 2.7 Pressure Part Design: Boilers have been designed in accordance with the requirements of the American Society of Mechanical Engineers ("ASME") Boiler and Pressure Vessel code for many years and boilers designed in accordance with ASME requirements have operated with an exemplary safety record. The design and manufacturing requirements of the ASME Code, by their very nature, are not proprietary to any particular supplier, are well defined and are well understood throughout the boiler industry. Each manufacturer and boiler design must be certified in accordance with the requirements of the ASME code. Additionally, there are manufacturing considerations to address that impact the pressure part design while still meeting the requirements of the ASME code.
- 2.8 Structural Design: Mr. Seibel contends that there will be heavy pieces that must be supported and the weight of the boiler pieces must be transferred through the boiler structure to the foundation. In fact, there are many boiler designs (including the Voyager and other competitive package boilers) that are entirely "bottom supported" and the structure (if any) is utilized to support only the setting and/or ancillary components.

Mr. Seibel states, "For example, the outer casing, which serves as the gas pressure containment of the boiler setting can be supplemented to transfer the weight of pressure parts into the foundation." While this may be true for the Keystone design, the Voyager design (as well as many other package boiler designs) does not primarily rely on the boiler setting for containment of the gas pressure or flue gases. In the Voyager design,

Case 1:04-cv-00325-SJM Document 117-5 Filed 03/26/2007 Page 4 of 13

Confidential Information Subject to Protective Order

p.5

only the front wall casing provides for gas sealing while the gas sealing for the remainder of the unit is achieved utilizing the gas tight welded water walls.

Mr. Seibel also states that, "The upper drum which is the greatest weight of the boiler may not be solely supported by the furnace or boiler bank tubes." In fact, as successfully demonstrated on many boiler designs, the weight of the upper drum can and often is supported solely by furnace and/or boiler bank tubes. While the Keystone "shop assembled" design may rely on the front and rear casing to provide supplemental support for the upper drum, the Voyager design (as well as many other successful shop assembled package boiler designs) does not. The design of the Voyager structure and base are entirely different than the Keystone.

Further, the concept of "shop assembly" does not connote that the entire boiler must be completely assembled and received on site as a singular piece. There are many package type boilers that are "shop assembled" and shipped to the jobsite in modular sections. The extent of "shop assembly" is an economic decision based on project and manufacturing location, shipping capability, size of the supplied equipment and costs. Consideration of shop assembly and shop assembled units is as equally important for other fuels as well as "clean" fuels and not limited by fuel type.

Package boilers and other large components have been successfully rail shipped, as well as by truck and/or barge, by many suppliers for several years. The rigors and imposed loads of shipping package boilers, including the transfer and placing on foundations, as well as the ability to properly determine structural requirements and design the base are widely held and known throughout the industry. Such experience and ability to properly design a base for a package boiler is not unique or exclusive to the Keystone design. There are significant and fundamental design differences between the Voyager and Keystone with respect to the base, structure and shipping support.

2.9 – Shop Assembled Boilers: While Mr. Seibel notes that boiler length is a variable that provides flexibility in boiler design, it should be further noted that the Keystone package boiler design was based on a fixed length for each model, while the Voyager design approach is to provide for a variable length in the design of a boiler for a specific application. Further, Mr. Seibel incorrectly states that all shop assembled boilers will have longitudinal drums. Not all shop assembled boilers are even of the drum type, and additionally there are several models of shop assembled boilers available that utilize transverse drums.

Further, Mr. Siebel notes the different configurations of various package type boilers and acknowledges that all designs have years of experience. While each configuration has particular attributes which may be advantageous in particular competitive circumstances, all have been (for many, many years) and continue to be widely utilized and successfully marketed.

Although, Mr. Siebel identifies the years of experience associated with the Keystone boiler, the many comparable years of experience of other package boiler suppliers in the

Case 1:04-cv-00325-SJM Document 117-5

Filed 03/26/2007

Page 5 of 13

p.6

Confidential Information Subject to Protective Order

industry should be recognized as well as the fact that the Keystone was not and is not the only "O" type boiler available in the marketplace. Mr. Seibel has recognized the impact of competitive influences, and thereby the contributions of competitor designs, in improving the design and reliability of package boilers, as well as the industry wide direction towards the adoption and incorporation of welded wall designs.

Although it is seemingly immaterial to the matters at hand, Mr. Seibel connotes specific shipping advantages to "O" and "A" type boilers, and concludes that heavier "A" and "O" with greater capacity can be shop assembled and shipped. It should be noted that these purported shipping advantages apply only to rail and/or truck shipments. Where barge shipment is a viable alternative, or in larger size ranges where fully shop assembled "A" or "O" type units cannot be rail or trucked shipped, "D" type units are extremely competitive. In fact, the largest shop assembled units have been "D" type units. Additionally, despite the disadvantages of shipping a "D" type unit by rail and/or truck, there are other favorable advantages offered by "D" type units that also allow "D" type units to be competitive alternatives even at smaller size ranges.

2.10 – Steam and Water Circulation: As Mr. Siebel has previously noted; the design of Water Tube boilers has been an ongoing process for more than 100 years. There are many thousands of Water Tube boilers and particularly "Package Boilers" that have been provided to the marketplace by a number of competitive suppliers. There is an extensive and well developed body of knowledge known throughout the industry pertaining to boiler design and specifically Steam and Water Circulation. In view of the conservative circulation ratios (10 to 40 times as noted by Mr. Siebel) inherent to package boiler configurations commonly and widely used throughout the industry, circulation has not been a problematic design issue associated with package boilers. There are a number of commercially available boiler design tools and industry expertise readily available which can address, evaluate and/or model circulation for package boiler applications.

Likewise, drum type boilers, irrespective of manufacturer have successfully incorporated steam separation devices of various types for many years. There are various types of separation devices available, including chevrons, centrifugal separators (or vortexes), demister pads, screens, etc. which have all been universally utilized by various boiler designers, manufacturers and suppliers. The technology and mechanism of steam/moisture separation is widely known. Steam separation equipment and expertise is commercially available from multiple providers.

Further, while Mr. Seibel notes the criticality of analyzing furnace tubes exposed to flue gases exceeding 2500°F, current burner and furnace designs result in lower combustion temperatures. Additionally, current modeling capabilities as provided by the burner supplier will typically identify a furnace temperature profile that would address such a concern.

Case 1:04-cv-00325-SJM Document 117-5 Filed 03/26/2007

Confidential Information Subject to Protective Order

p.7

Page 6 of 13

Section 3 – Development of Keystone Steam Generators and, 3.1 – Acceptance of Keystone Steam Generators:

Again, although Mr. Siebel identifies the years of experience associated with the development of the Keystone boiler, the many comparable years of experience of other package boiler suppliers in the industry should be recognized as well and the fact that the Keystone was not and is not the only "O" type boiler available in the marketplace.

In fact, Mr. Seibel has not and cannot claim that the Keystone was the first shop assembled package boiler in the marketplace. As Mr. Seibel acknowledges, the Keystone boiler was developed and introduced to meet competitive market demands. The fact that the Keystone may have been developed based on years of prior experience does not infer that all aspects of such experience were unique or proprietary to the Keystone design.

Since the Keystone was developed and introduced there have been many thousands of Water Tube boilers and particularly "Package Boilers" other than Keystones provided to the marketplace by a number of competitive suppliers which have demonstrated or continue reliable service. There is an extensive and well developed body of knowledge widely known throughout the industry pertaining to package boiler design. With the many thousands of operating boilers, design information has become widely and readily available, especially since the advent of the "information age". Product feature and design information, especially for relatively simplistic package boilers, which particular boiler suppliers may have historically attempted to keep as closely held or deem "confidential" has become generally widely known throughout the industry.

Further, while it might be arguable as to what supplier might have first incorporated or introduced a particular feature, such arguments are immaterial as to whether such features were or remain proprietary to the Keystone design.

Access Cavity: To the extent that the Keystone included provisions for an access cavity in their tube layouts, those provisions were readily identifiable and made known by marketing information introduced into the public domain; however available drawings indicate that the access cavity was incorporated to provide accommodation for installation of sootblowers rather than facilitate inspection of the boiler section.

To facilitate inspection of the boiler section, additional space and an access door would have to be added to allow access into the boiler section. Although other designs, including the Voyager, utilize an entirely different sootblowing arrangement, such that the Keystone type access cavities are not necessary, competitive suppliers can (and have) accommodated customer requirements to provide access provisions for boiler section inspection.

Optional Water Cooled Front and Rear Welded Walls: Mr. Seibel confirms that this option was introduced on the Keystone more than 30 years ago. Information regarding its general layout and configuration are well known throughout the

Case 1:04-cv-00325-SJM

Filed 03/26/2007

Confidential Information Subject to Protective Order

Page 7 of 13

industry. Other competitive suppliers have also utilized similar layouts, configuration and construction for Water Cooled Front and Rear Welded Walls for many years.

Document 117-5

Center of Gravity on boiler centerline is inherent to both "A" and "O" boiler configurations which have been readily known and available in the marketplace for more than 30 years.

Structure integrated with Pressure Parts: As previously noted the Voyager and certain other competitive designs do not rely on an integrated structure for support of Pressure Parts. While not utilized by the Voyager design, an integrated structure as utilized by the Keystone has been well known throughout the industry and cannot be considered a proprietary feature.

The use of lifting lugs on steam drums, including the Keystone and other competitive package boilers, is readily recognized by even the most casual of inspections of installed units and also is readily identified on pictures and drawings in the public domain and cannot be considered a proprietary feature.

Testing the "gas tight" integrity of boilers (both shop assembled and field erected) is an industry standard practice and the use of a soap "bubble test" (or a smoke test) is a common and accepted method of performing such a test. It should be noted that the gas containment design varies between the Keystone and Voyager. While the Keystone relies on seal welding of the gas tight external casing (or substantial portions of an external gas tight casing even for welded wall units), the Voyager (as well as several other package boiler designs) relies primarily on the gas tight welded wall pressure parts construction (with the exception of the front wall casing to seal the front wall). The outer casing on a Voyager is primarily utilized for insulating and personnel protection purposes.

- 3.2 Keystone Steam Generator Versatility: Mr. Seibel's statements that Erie City and Zurn Energy (now IKE) maintained a significant engineering capability ready to extrapolate its products overlooks that Zurn Energy became Aalborg (in 1996), which in turn became Erie Power Technologies before acquisition by CMI which in turn sold selected assets to IKE. Further, this statement is contrary to acknowledgements made by former EPTI personnel that under both Aalborg and EPTI, available engineering resources were focused on the HRSG product, not the Keystone package boiler. Additionally, it has been identified that the predominant number of EPTI engineering resources and expertise remained with CMI and were not transferred to IKE.
- 3.3 Design Evolution
- 3.4 Important Variations in Design
- 3.5 Keystone Steam Generator Superheaters

Page 8 of 13

Case 1:04-cv-00325-SJM

Document 117-5 Fi

Filed 03/26/2007

860-870-9786

Confidential Information Subject to Protective Order

While Mr. Seibel contends that Keystone Design features have been changed and updated as experience has been gained and customer expectations have changed, his own statements indicate that the updates and/or changes were made 30+ years ago.

Mr. Seibel notes that the last substantial "setting" design changes were made to the Keystone more than 30 years ago. It must be noted that the Voyager design incorporates a different setting design and reflects the utilization of improved material currently commercially available.

The strengthened design of the Keystone of the Front and Rear Casing Structure was implemented shortly after the introduction and shipping of the early units, which presumably would have been in the 1950s. Since then, there has been substantial experience and knowledge gained throughout the industry to successfully ship package boilers. Again, unlike the Keystone, the Voyager design does not rely on the Front or Rear Casing Structure for support of the Pressure Parts.

The trend in the industry for many years has been to incorporate welded walls, which were introduced on the Keystone in 1972, further confirming the realistic expectation that the licensed technology would include and allow the use of welded walls. Welded walls, including the configuration as incorporated in the Keystone, have also been commonly utilized by other suppliers since the mid-1970's.

The fundamental design of the Keystone superheater was introduced in 1965. Contrary to Mr. Seibel's contention, competitive designs incorporate or have incorporated radiant as well as convective and combination radiant/convective superheaters in a wide variety of applications. There is widespread and extensive knowledge throughout the industry regarding superheater characteristics, design and configuration which the designer optimizes dependent on application and project requirements.

Section 4 – Product Development, 4.1 - Economic Factors:

As noted by Mr. Seibel, competition within the boiler industry is very keen. Knowledge of competitive features and designs are well understood throughout the industry. Reflective of the many years and numbers of package boilers in a competitive marketplace, there is no remaining proprietary differentiation in design or features unique to any particular supplier. While the Keystone was a successful product following its introduction, other competitive designs were also successful and enjoyed significant market shares. As acknowledged by EPTI personnel, and as indicated by information included with Mr. Siebel's report, sales of the Keystone began to substantially diminish during and throughout the 1990's, coincident with package boilers becoming a low price driven "commodity" product.

Mr. Seibel further indicates that profit margins are well controlled as a result of the keen competition. In fact, the keen competition establishes a market price. Available margins are the result of a particular supplier's ability to control costs. It is generally recognized

Confidential Information Subject to Protective Order

p.10

that margins varied widely between suppliers, reflective of their business model and cost basis. In this regard, the larger "traditional" boiler suppliers were at a disadvantage compared to smaller specialty competitors that enjoyed the benefit of a low overhead structure as well as lower cost manufacturing.

In view of the many years of successful experience with package boiler designs, a well known and widely held body of knowledge regarding package boiler design, the similarity of package boiler designs and performance between various suppliers, by the mid- 1990's there was minimal, if any, technical evaluation or qualification of package boiler designs.

Further, the extensive and widely held body of knowledge and commercial availability of design and rating tools allowed lower cost supplier's to economically design and readily validate the expected performance of package boilers. The building or demonstration of a "prototype" was not (and is not) necessary or expected. In fact, multiple new boiler designs have been successfully introduced to the market by several suppliers without building such a prototype.

Simply stated, by the mid-1990's the capability to economically design and validate the design/performance for package boilers was not a barrier to market entry. And while "traditional" large boiler suppliers may have elected to invest their resources in other products, other low cost specialty suppliers viewed package boilers as a viable and attractive opportunity and have been successful in this market.

- 4.2 Design Requirements,
- 4.3 Testing a New Design,
- 4.4 Reverse Engineering:

The understanding of performance and warranty risks are well known throughout the industry. There are also very economical means to mitigate such risk, both in the design/selection of equipment as well as contractual measures. Comparison of designs is facilitated by the widespread ability to "reverse engineer" considering the large amount of available information and ability to physically inspect units to identify the design configuration, layout and details of both complete boilers as well as particular features. The availability of boiler design/boiler rating and design expertise throughout the industry easily allow for the validation of performance factors and performance expectations without the necessity of building or testing a prototype.

## 4.5 - Determining Heat Transfer Factors

In view of the many years of experience and the thousands of installed package boilers, there is an extensive and well developed body of knowledge known throughout the industry pertaining to boiler design and heat transfer. Further, as this body of knowledge has expanded, the understanding of multiple factors impacting heat transfer calculations and heat transfer calculation tools have become much more sophisticated. With the many thousands of operating boilers, non-proprietary "empirical" performance information has

Case 1:04-cv-00325-SJM Document 117-5 Filed 03/26/2007 Page 10 of 13

Confidential Information Subject to Protective Order

p.11

become widely and readily available, especially since the advent of the "information age", to assess the validity and accuracy of such heat transfer calculation methodologies and factors. Such factors, especially for relatively simplistic package boilers, which particular boiler suppliers may have historically attempted to keep as closely held or deem "confidential" have become generally widely known throughout the industry. In fact there are a number of commercially available boiler design tools and rating packages available which incorporate or reflect such information. Such design tools and rating programs can also be utilized to back calculate not only the overall heat transfer coefficient but also the "fudge" and/or risk mitigation factors (as compared to a classical heat transfer coefficient calculation) reflected in any particular design.

Mr. Seibel's statement that efficiency is the most common guarantee overlooks generally required guarantees for steam production (flow, pressure and temperature) and emission guarantees among others. While Mr. Seibel may believe that efficiency is the guarantee of most concern, emission guarantees are most certainly critical considering that an out of compliance unit will generally not be allowed to operate. Boiler suppliers typically recognize such performance risks and commonly mitigate such risks by the inclusion of contingencies. While individual suppliers will attempt to retain the confidentiality of such risk mitigation contingencies, it is generally recognized that in view of the commonality of risks between suppliers that similar, if not identical, contingencies are typical amongst multiple suppliers.

4.6 – Closely Held Information: While boiler suppliers typically do not divulge empirical heat transfer information, such information has been developed by independent testing and analysis of known performance and design information for not only complete boilers, but also their various sections.

While boiler suppliers in the past traditionally attempted to minimize or withhold drawings and information pertaining to the pressure parts, such information and drawings are now demanded by customers and commonly made available. Inasmuch as shop fabrication details are now also commonly included on the pressure part arrangement drawings, these are disseminated as well.

There is extensive published information available from boiler suppliers as well as third party sources/suppliers, including drawings, illustrations and technical papers pertaining to the design and application of steam separation equipment.

Information now commonly provided for selling or marketing purposes also includes tube layouts, numbers and sizes of tubes and calculation of heating surfaces as well as other information. Gas temperature and velocity profiles throughout the unit may also be made available (as previously provided by Aalborg, in addition to other detailed performance and design information, specifically with regard to Keystone "O" boiler proposals). Specific and detailed performance data, reflecting the specified fuel analysis is also generally provided.

Case 1:04-cv-00325-SJM Document 117-5

Filed 03/26/2007

Page 11 of 13

p.12

Confidential Information Subject to Protective Order

Subsequent to award of the contract, many suppliers now also commonly provide the customer with a performance/rating program such that the customer can determine or evaluate equipment performance for changes in fuel specification and/or operating conditions.

Radiographs and Quality Assurance Reports are typically provided in accordance with client specifications and contractual requirements.

Labor costs (inclusive of benefits) are in many cases made available, reflective of collective bargaining agreements and/or statutory filings. Competitive production costs, particularly as many package boilers are now fabricated by independent suppliers on a competitive basis, are generally well known within the industry. Typical prices for materials are also generally known, inasmuch as materials and components are also procured competitively.

Manufacturing process capability is often supplied for both marketing and customer acceptance purposes.

Section 5- Findings

5.1 - Mr. Seibel contends that an empirical heat transfer factor described in the IKE Keystone Design Manual was passed along to VEO's vendor. Mr Seibel makes this contention without identification of the purported empirical heat transfer factor or further substantiation. Neither does Mr. Seibel provide or establish any basis that such purported information was protected proprietary or confidential information under the license agreement.

It should be noted that VEO never had in its possession an IKE Keystone Design Manual. Mr. Seibel's contention is contrary to the August 10, 2006 deposition testimony of both Messers. James Tighe and Darren Stephenson. A review of the documentation as provided by VEO to its vendor indicates that VEO did not provide or disclose any empirical heat transfer factors, calculations or heat transfer calculation formulae to its vendor.

- 5.2 Contrary to Mr. Seibel's claim that the information and Voyager drawings are incomplete and insufficient, VEO has provided complete drawings and design information as currently utilized and adequate to fabricate Voyager boilers. Further, the drawings and information provided are more than adequate to discern that there are substantial differences in layout and details between the Keystone and Voyager designs and drawings.
- 5.3 The use of lifting lugs, location of lifting lugs on upper drums and configuration of lifting lugs is typical of multiple competitive package boilers offered in the marketplace and not unique nor proprietary to the Keystone design. The profile of the lifting lugs must conform to the drum shape, and will vary for the different drum sizes as incorporated in the Voyager design. Drum lifting lugs as utilized by a number of different suppliers are

Case 1:04-cv-00325-SJM Document 117-5

Filed 03/26/2007

Page 12 of 13

p.13

Confidential Information Subject to Protective Order

readily visible through casual inspection and are depicted in pictures, marketing information and shown on drawings made publicly available by a number of different suppliers. Weld requirements and weld details utilized by all suppliers would typically be in accordance with AWS (American Welding Society) codes and conventions.

- 5.4 A comparison of drawings clearly shows differences in bending angles, spacing and dimensions in the layout of front and rear wall tubes between the Voyager and Keystone designs. The Voyager design reflects and incorporates the use of commonly available bending dies and industry accepted bending practices complying with ASME Code requirements as normally utilized by the third party suppliers of the bent tubing.
- 5.5 There are differences in the design and details of the rear wall access door between the Voyager and Keystone, as clearly shown and identifiable on the respective drawings. Including (amongst other notable differences) that the doors are not even the same size, are (contrary to Mr. Seibel) located in a different part of the rear wall, and as a result of the difference in location, the tube opening and tube bending layout is an entirely different configuration. Additionally there are differences in the design and construction of the door itself.
- 5.6 The design and construction and "Typical Section" view of the Voyager outer wall, as well as the Keystone, is typical and identical to that used by multiple package boiler suppliers and is well known throughout the industry. The details of the "Typical Section" view is neither unique nor proprietary to the Keystone and similar Keystone "Typical Section" views have been included in marketing materials made readily available to the public domain.
- 5.7 VEO, nor this expert, have ever suggested nor claimed that a complete boiler design "can be taken from" or be developed solely from Sales brochures and/or product "informatives" (SIC) available in the public domain, nor has VEO or this expert ever offered as evidence that such Sales brochures and/or product "informatives" represent the only available information in the public domain, or otherwise available to VEO from other sources that would not be protected by the confidentiality and/or secrecy provisions of the License Agreement.

Specifically, there is significant and widely known prior knowledge and expertise regarding heat transfer throughout the industry. There are numerous publications in the public domain pertaining to heat transfer and heat transfer calculations with regard to boilers and heat exchangers. Boiler design and selection tools including heat transfer calculation and rating programs are commercially available.

Likewise, there is significant and widely known information, prior knowledge and expertise throughout the industry to allow for both the fabrication and total assembly of boiler parts, or that such knowledge can be easily extrapolated and developed by an experienced boiler parts fabricator or boiler manufacturer based on inspection or information in the public domain. It should be noted that even under the License Agreement and as repeatedly noted by EPTI personnel, VEO had the independent

 Sep 26 06 05:36p
 P. Miller
 860-870-9786

> Confidential Information Subject to Protective Order

p.14

responsibility to develop their own fabrication details, assembly methods and procedures which they would in any case be entitled to utilize for their own use or purposes.

5.8 - In view of VEO's prior experience, the prior experience of VEO personnel and the capabilities and expertise of VEO, its employees and subcontractors, the extensive and well developed body of knowledge known throughout the industry pertaining to boiler design and heat transfer and the availability of commercially available, modern design tools, VEO could and, in fact, did develop the Voyager design independently and without reliance on proprietary Keystone technical information or copying of Keystone drawings.

VEO, contrary to Mr. Seibel's unsubstantiated statement, did not pass along any IKE empirical information to a Vendor, nor did VEO provide any other heat transfer coefficients, calculation methodology or formulae to its Vendor.

The identified substantial and fundamental differences between the Voyager and Keystone designs and the significant differences between the Voyager and Keystone drawings, as readily and easily ascertained by review and comparison of the respective drawings and technical information, clearly evidence that VEO did not copy the Keystone drawings or design.

Paul F. Miller, PE

Global Management Consulting, LLC

September 26, 2006